

**WHAT IS CLAIMED IS:**

1. A self-adhering, multi-layer composite membrane for sealing a substrate and providing waterproof integrity thereto comprising:
  - a surface layer adapted to interface the environment;
  - an adhesive layer, having a top surface and a bottom surface, said top surface forming a bond with said surface layer;
  - a polyolefin film adhered to said bottom surface of said adhesive layer forming a bond therewith;
  - a waterproof, asphalt-based adhesive layer adhered to said polyolefin film;
  - a reinforcing mat, having a top surface and a bottom surface, said top surface adhered to said waterproof, asphalt-based adhesive layer;
  - a waterproof, asphalt-based adhesive layer, having a top surface and a bottom surface, said top surface adhered to said bottom surface of said reinforcing mat, and said bottom surface is adapted to sealingly adhere to a substrate; and
  - a polyolefin release film on the bottom surface of said waterproof asphalt based adhesive layer to prevent adhesion of said waterproof asphalt based adhesive layer and said surface layer when said multi-layer composite membrane is wound into a spiral roll.
2. The self-adhering, multi-layer composite membrane of claim 1, wherein said surface layer is a metal or a polymeric material having a thickness of from about 0.5 mils to about 3.0 mils.
3. The self-adhering, multi-layer composite membrane of claim 2 wherein said metal is aluminum or copper.

4. The self-adhering, multi-layer composite membrane of claim 2 wherein said polymeric material is polyolefin.
5. The self-adhering, multi-layer composite membrane of claim 4 wherein said polyolefin is polyethylene or polypropylene.
6. The self-adhering, multi-layer composite membrane of claim 5 wherein said polyethylene is a high density polyethylene.
7. The self-adhering, multi-layer composite membrane of claim 1 wherein said waterproof asphalt based adhesive layer contains a styrene-butadiene-styrene polymer.
8. The self-adhering, multi-layer composite membrane of claim 7 wherein said waterproof asphalt based adhesive layer further comprises a limestone filler in finely divided form.
9. The self-adhering, multi-layer composite membrane of claim 1 wherein said reinforcing mat is selected from the group consisting of polyester, fiberglass and organic papers having a weight of from about 20 g/m<sup>2</sup> to about 120 g/m<sup>2</sup>.
10. The self-adhering, multi-layer composite membrane of claim 9 wherein said reinforcing mat is polyethylene terephthalate.

11. The self-adhering, multi-layer composite membrane of claim 1 wherein said polyolefin release film has a thickness of from about 0.5 mils to about 5.0 mils.
12. The self-adhering, multi-layer composite membrane of claim 1 wherein said polyolefin release film is treated with silicone to facilitate release from the surface layer when the self-adhering multi-layer composite membrane is wound into a spiral roll or when said self-adhering multi-layer composite membrane is installed on a substrate.
13. The self-adhering multi-layer composite membrane of claim 1 wherein said waterproof asphalt-based adhesive layer comprises:
  - of from about 60% w/w to about 80% w/w of asphalt flux;
  - of from about 5% w/w to about 15% w/w of styrene-butadiene-styrene polymer or styrene-iso-styrene polymer;
  - of from about 5% w/w to about 30% w/w of a limestone filler; and
  - of from about 0.1% w/w to about 10% w/w naphthennic oil.
14. The self-adhering, multi-layer composite membrane of claim 13 wherein the thickness of said waterproof asphalt based adhesive is of from about 0.5 mils to about 30 mils.
15. The self-adhering, multi-layer composite membrane of claim 13 wherein said waterproof asphalt-based adhesive layer further comprises from about 0.1% w/w to about 10% w/w of a polybutene polymer.